MODULE VI – OPEN BURN AND OPEN DETONATION (OB/OD)

VI.A. APPLICABILITY

VI.A.1. The requirements of this permit module pertain to the treatment of waste military munitions at the OB/OD area at the Tooele Army Depot (TEAD). The Permittee shall comply with UAC R315-8 and all conditions of this module.

VI.A.2 The permit conditions of this module allow treatment at the OB/OD area, as designed and described in the drawings and specifications in Attachment 1. The OB/OD area consists of three Hazardous Waste Management Units (HWMUs), the burn unit with 15 burns pans, the detonation unit with a maximum of 19 detonation sites and the static fire unit with six static firing silos.

VI.A.3. OB/OD operations shall be accomplished by trained explosives personnel in accordance with DOD OB/OD Standard Operating Procedures (SOPs) and the conditions of this permit.

VI.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

VI.B.1 The Permittee may treat, at the OB/OD units, only hazardous waste military munitions characterized as D003, and generated from the sources listed in Condition II.P.2. and from the following general sources:

VI.B.1.a. Unserviceable or serviceable excess Army munitions and explosive materials (e.g. bulk explosives, small arms munitions, projectiles, flares, grenades, sub-munitions, bombs and rocket motors);

VI.B.1.b. Unserviceable or serviceable excess solid propellant components and associated residue generated by an Army contractor and the contractor requests treatment assistance; and

VI.B.1.c. Explosive residues generated from inspection and disassembly activities of munitions at the Facility.

VI.B.2. The Permittee may only treat hazardous waste military munitions with known classifications and compositions in the *MIDAS Database* and in Attachment 2 unless an emergency situation exists. If an emergency exists and an item is not in the MIDAS database, all available information will be reviewed to minimize hazards to the Demil team and the environment. Information on the item will be

submitted to DAC, for inclusion into the MIDAS database, within 60 days of treatment.

VI.B.3. The Permittee is prohibited from treating wholly inert items and improvised explosive devices (e.g. homemade bombs which are non-military), chemical and nuclear weapons, their devices and components and military munitions, propellant or residues that contain free liquids. Wholly inert items are defined as those that can be verified inert by being cracked and exposed showing that no explosives are present.

VI.B.4. Subject to the prohibitions of Conditions VI.B.1, 2 and 3, and Condition II.P.2, the Permittee shall not exceed the maximum Net Explosive Weight (NEW) for each event and each calendar year as listed below:

Site	**EPA Code**	**Daily Quantity (NEW lb/day)**	**Annual Quantity (NEW lb)**	**Frequency** (days/year)
Burn pan	D003	2,400	270,000	90
Static firing silo	D003	3,400	2,200,000	120
Open detonation pit	D003	7,500	1,000,000	90

VI.B.5. Addition of hazardous waste codes to Conditions VI.B.4. requires modification of the permit as specified in Condition I.D.

VI.B.6. The Permittee shall comply with the waste compatibility requirements of UAC R315-8-2.8.

VI.C. GENERAL OPERATING CONDITIONS

VI.C.1. The Permittee shall adhere to site specific SOPs and DOD Operational Directives contained in the operating record and in Attachment 1 including the following non-site-specific procedures:

VI.C.1.a. OB/OD operations shall be conducted within the secure area of the OB/OD area with controlled access for humans and livestock. At a minimum, DOD Explosives Safety Standards, shall be used to dictate safe separation distances from external receptors.

VI.C.1.b. The OB/OD area shall be posted with warning signs to keep unauthorized personnel out. Warning flags shall fly and access roads shall be barricaded and posted during OB/OD operations.

VI.C.1.c. During OB/OD operations, telephone or two-way radio contact shall be available and operational with support personnel, including security and fire fighting units.

VI.C.1.d. The integrity of the OB/OD area and support equipment shall be determined through regular inspections in accordance with the inspection plan in Attachment 4. Inspection records shall be maintained at the facility.

VI.C.1.e. Prior to OB/OD, meteorological data including wind speed and direction, approach of storms (including electrical storms), precipitation, cloud cover, visibility and inversions (temperature with altitude) shall be monitored to ensure that OB/OD is not conducted under adverse weather conditions. Inversions shall be monitored by the clearing index. Meteorological data shall be recorded for each burn or detonation and maintained in the operating record.

VI.C.1.f. Waste munitions shall be treated within 24 hours of receipt at a OB/OD unit.

VI.C.1.g Prior to OB/OD, waste munitions shall be inspected to ensure that only waste defined in Condition VI.B. is burned or detonated.

VI.C.1.h. Clean-up of the OB/OD area will be conducted according to Facility SOPs and the Army Standard *IAW AMC-R 755-8, Authorizing, Accomplishing and Reporting Demilitarization of Class V Materials.* Within two working days of the completion of a burn, detonation or static fire, personnel will perform a sweep of the area, all pits, silos and pans to include the immediate surrounding areas to clear all UXO or any metal fragments that could threaten human health or the environment. Items or material such as lumps of explosives or unfuzed munitions will be recovered and prepared for treatment on the next scheduled day. Fuzed ammunition or other types of munitions that are unsafe to move will be treated in place. Non-explosive scrap metal, casings, fragments and related items will be

picked-up and cleared from the OB/OD area bi-annually, once in the Spring prior to full-scale treatment and once in the Fall upon completion of full-scale treatment. Metal waste shall be recycled whenever feasible.

VI.C.1.i. The donor charge and placement geometry for OB/OD operations shall be optimised to minimize the generation of unburned and un-detonated waste and residue. All re-burns and re-detonations shall be recorded in the operating record.

VI.C.1.j. OD events shall be confined by covering or burying with soil, to discourage the production of excessive noise. High order burns and detonations shall be conducted using the appropriate amount of initiator to encourage the complete combustion of the energetic material.

VI.C.1.k. Prior to each OB/OD event, each treatment area to be used shall be inspected to insure that no livestock are present.

VI.C.1.l. The OB/OD operations shall not generate noise or ground vibration at levels that will have an adverse effect on nearby onsite and offsite receptors. Operations shall not exceed local noise ordinances. Noise complaints shall be recorded in the operating record.

VI.C.1.m. The Permittee shall have a noise management program.

VI.C.1.n. The Permittee shall have available, during each burn or detonation, adequate fire protection equipment and containment measures (e.g. firebreaks) to assure the confinement and control of any fire resulting from the OB/OD operations. The firebreaks shall be cleared and maintained clear to prevent the spread of any fire within the OB/OD area.

VI.C.2 The Permittee shall operate the OB/OD area to prevent unacceptable risk of cancer and non-cancer effects to on-site workers and off-site residents and to minimize significant effects to the ecosystem surrounding the OB/OD area. The Permittee shall maintain compliance with the environmental performance standards listed in UAC R315-8-16 and review the information in Attachments 16 and 17 periodically according to Condition II.R.2.

VI.C.3. The Permittee shall adhere to the following conditions to prevent unacceptable risk of cancer and non-cancer effects due to exposure to OB or OD emissions:

VI.C.3.a. The cumulative carcinogenic risk to on-site workers shall not exceed 1.0×10^{-4} (one in one hundred thousand) for the closest potential receptors, which during operations are the workers positioned at the gate at the entrance to the unit and the workers at the detonation firing bunker. The maximum NEW, including donors and initiators, to be treated daily shall not exceed the values in Condition VI.B.4.

VI.C.3.b. The cumulative carcinogenic risk to actual or potential off-site receptors shall not exceed 1.0×10^{-6} (one in a million). The cumulative non-carcinogenic hazard to actual or potential off-site receptors shall not exceed a hazard index of 1.0 for any 24-hour period following initiation of a burn or detonation.

VI.C.4. The Permittee shall record in the OB/OD operating record all unplanned discharges, fires and explosions, including all low order detonations, as specified in UAC R315-8-4.(j).

VI.D. SPECIFIC OPERATING CONDITIONS

VI.D.1. Open Burning in Burn Pans

VI.D.1.a The Permittee shall operate and maintain the approved burn pans based on the design in Attachment 1 and in accordance with the following conditions:

VI.D.1.a.i. The open burning pans shall be used to burn only propellant from propellant based munitions and associated components. Munition components shall be treated in the burn pans only if the integrity of the pan is not jeopardized during treatment.

VI.D.1.a.ii. To help prevent ground fires, and in accordance with AMC regulation 385-100, during operations, dry grass, leaves, and other extraneous combustible material in the amounts sufficient to spread fire shall be removed within a radius of 200 feet from the point of destruction.

VI.D.1.a.iii. The OB operation may not be initiated with any solid waste.

VI.D.1.b. The Permittee shall operate the burn pans in order to minimize exposure to air emissions in accordance with the following conditions which shall be recorded in the operating record:

VI.D.1.b.i. No burn shall be initiated when the wind speed is in excess of 20 mph with gusts to at least 30 mph or wind speeds less than three mph.

VI.D.1.b.ii. No burn shall be initiated when the atmospheric clearing index is less than 500.

VI.D.1.b.iii. No burn shall be initiated when an inversion is present as defined by a clearing index less than 500.

VI.D.1.b.iv. No burn shall be initiated when the visibility is less than one mile.

VI.D.1.c. The integrity of each pan shall be evaluated before each use. The results of the inspection of the pans shall be recorded on the operations checklist.

VI.D.2. **Open Detonation in Pits**

VI.D.2.a. The Permittee shall operate and maintain the detonation area on the ground surface or in pits in accordance with the plans in Attachment 1.

VI.D.2.b. The Permittee shall operate and maintain the detonation area in accordance with the following conditions which shall be recorded in the operating record:

VI.D.2.b.i Detonations shall occur during daylight hours, sunrise to sunset.

VI.D.2.b.ii Detonations shall not be initiated when the wind speed is in excess of 15 mph or gusts greater than 20 mph or wind speeds less than three mph.

VI.D.2.b.iii The Net Explosive Weight (NEW) treated by OD operations shall not exceed the limit stated in Condition VI.B.4 for each event.

VI.D.2.b.iv. Open detonations shall not occur in more than one pit at one time

VI.D.2.b.v. Open detonations shall not be initiated when the clearing index is less than 500.

VI.D.2.b.vi. Open detonations shall not be initiated when the visibility is less than one mile.

VI.D.2.b.vii Any fires started from kick out from a detonation shall be extinguished as soon as possible.

VI.D.3. **Static Firing in Silos**

VI.D.3.a. The Permittee shall operate and maintain the static silos in accordance with the design plans and specifications in Attachment 1.

VI.D.3.b. The Permittee shall operate and maintain the silos in accordance with the following conditions:

VI.D.3.b.i. Burning shall be conducted only during daylight hours, sunrise to sunset.

VI.D.3.b.ii. When not in use, the Permittee shall place and maintain a lid on each silo to prevent precipitation, vegetation and wildlife from entering the silo.

VI.D.3.b.iii. The Permittee shall manage accumulated precipitation in accordance with the WAP in Attachment 3.

VI.D.3.c. The Permittee shall operate and maintain the silos to minimize exposure to and generation of air emissions and ejected residue in accordance with the following conditions:

VI.D.3.c.i. During operations, an area with a 200 ft radius surrounding each silo shall be cleared of plant or other combustible material to prevent fires.

VI.D.3.d. The integrity of each silo and the concrete secondary containment shall be evaluated by visual inspection prior to use. Results of the inspection shall be recorded on the operations checklist.

VI.E. RESIDUE AND ASH MANAGEMENT

VI.E.1. All residue and ash generated from OB/OD operations shall be managed in accordance with the procedures in Attachment 2 and the following conditions:

VI.E.1.a. Burn pan lids shall remain on the pans at all times except during operations.

VI.E.2. Sampling and analysis of ash and residue shall be conducted according to standard procedures as described in Attachment 2.

VI.F. INSPECTION SCHEDULES AND PROCEDURES

VI.F.1 The Permittee shall inspect the OB/OD units in accordance with the inspection requirements in Attachment 4. The Permittee shall conduct inspections of the silos, burn pans and detonation pits each day of treatment.

VI.G. ENVIRONMENTAL MONITORING REQUIREMENTS

VI.G.1 Soil Monitoring

VI.G.1.a. A treatment zone shall be defined as the aerial surface of the entire OB/OD area (including the entire hill side) described in Attachment 1 and extending five feet below ground surface. Within 180 days of permit issuance, a SAP to quantify the organic, inorganic and explosive constituents in the treatment zone soils for each of the treatment areas (burn pans, detonation pits, static silos) shall be submitted for review and approval by the Executive Secretary. The plan shall utilize previous sampling results to appropriately focus on the number and location of samples and the type and amount of analysis.

VI.G.1.b. The data from the soil sampling shall be used in a human health risk assessment to evaluate the risk to workers at the OB/OD area due to direct exposure to the soils and in an ecological risk assessment to evaluate the risk to the fauna and flora of the area. Within 120 days of approval of the SAP by the Executive Secretary, the analytical results of the sampling shall be submitted. Within 90

days of approval by the Executive Secretary of the analytical results, revised Risk Assessments and a Risk Management Plan shall be submitted to the Executive Secretary.

VI.G.1.c. Based on results from the initial sampling, analysis and risk assessments, the SAP may be implemented annually to ensure the risk thresholds in Condition II.R. are not exceeded. The results of the sampling may need to be incorporated into the risk assessments and the assessments updated according to Condition II.R.2.

VI.G.1.d. The Permittee shall submit a soil analysis report to the Executive Secretary within 90 days of any soil sampling event. The report shall contain the validated analytical data, soil sampling location map, a detailed analysis of the data and other pertinent information to evaluate the risk to workers.

VI.G.1.e. Should analytical results from any soil sampling event indicate that the soil constituents exceed an acceptable risk threshold, the Permittee shall address the contaminated soil in accordance with UAC R315-8-6.12 or if necessary provide additional personnel protection equipment to workers at the area.

VI.G.2. **Groundwater Monitoring**

VI.G.2.a. Within 120 days of approval of a revised Human Health Risk Assessment (HHRA) and Risk Management Plan (RMP), the Permittee shall submit to the Executive Secretary for review and approval, a Sampling and Analysis Plan (SAP) for a groundwater monitoring program to comply with the requirements of UAC R315-8-6.9. The program shall include the following:

VI.G.2.a.i. Procedures to collect groundwater samples from groundwater monitoring well OBOD1.

VI.G.2.a.ii. A list of Contaminants of Concern (COC), to include those constituents listed in Table 1 in Attachment 19, as required by UAC R315-8-6.4;

VI.G.2.a.iii. A list of concentration limits (UAC R315-8-6.5) for constituents established under UAC R315-8-6.4;

VI.G.2.a.iv. Procedures for statistical evaluation of the data in determining whether background values of concentrations have been exceeded as defined in UAC R315-8-6.8(h);

VI.G.2.a.v. Procedures to determine the groundwater elevation of the well prior to each sampling event;

VI.G.2.a.vi. Procedures to sample and analyze unfiltered groundwater samples; and

VI.G.2.a.vii. A Quality Assurance Project Plan.

VI.G.2.b. The point of compliance, for operations at the OB/OD area, shall be a vertical surface extending through well OBOD1, which is down gradient from the OB/OD operations area.

VI.G.2.c. Within 60 days of receiving the analytical data from the laboratory, the Permittee shall provide the Executive Secretary with a groundwater monitoring report.

VI.G.2.d. The Permittee shall notify the Executive Secretary if there is a statistically significant increase of the concentration of a COC or of a background concentration for any constituent. The Permittee shall:

VI.G.2.d.i. Notify the Executive Secretary within seven calendar days of the detection of the increase;

VI.G.2.d.ii. Resample the well or wells that have exceeded concentration limits and provide the results to the Executive Secretary within 30 days of the initial sampling event to determine if compliance monitoring is required; and

VI.G.2.d.iii. Within 90 days of determination by the Executive Secretary that compliance monitoring is required for the one well at the OB/OD area, the Permittee shall request to modify the permit to establish a compliance monitoring program to meet the requirements of UAC R315-8-6.10.

VI.G.2.e. Abandonment of any monitoring well shall be accomplished in a manner that prevents vertical movement of water and possible contaminants within the borehole and the annular space surrounding the well casing. The Permittee shall comply with Utah Division of Water Rights rules for well abandonment.

VI.H. FACILITY MODIFICATION/EXPANSION

VI.H.1. Modification of the design plans and specifications in Attachment 1 and construction of additional treatment units shall be allowed only in accordance with Condition I.D.

VI.I. CLOSURE AND POST CLOSURE

VI.I.1. The Permittee shall close the OB/OD units in accordance with the Closure Plan in Attachment 8 or conduct post-closure monitoring in accordance with UAC R315-8-7.

VI.J. OB/OD OPERATING RECORD

VI.J.1. The Permittee shall maintain an operating record describing the OB/OD activities. Portions of the operating record may be maintained at the area where the report is generated. For example, records of waste treated at the OB/OD units may be maintained by ammunition operations personnel and kept in their office. The record shall include the following information:

VI.J.1.a. The requirements of UAC R315-8-5.3.

VI.J.1.b. Description and quantity (number and NEW) of each hazardous waste munition, initiators and donors received and treated at the OB/OD units.

VI.J.1.c. Date of treatment.

VI.J.1.d. Copies of documents showing the disposition of residues transported off the OB/OD area.

VI.J.1.e. Current copies of all SOPs used at the OB/OD units,

VI.J.1.f. An annual running total of the NEW of all energetics treated at the OB/OD units.

VI.J.1.g. Meteorological conditions during each burn or detonation as listed in Condition VI.C.1.f.

VI.J.1.h. All information to characterize waste. Information to support Condition VI.B.2. shall be in the operating record.

VI.K LAND USE PROVISIONS

VI.K.1. Whenever land use surrounding the Facility or the OB/OD area changes, the Permittee shall submit to the Executive Secretary a land use assessment to ensure that the land surrounding the OB/OD area is devoid of development and that the land uses listed in Condition VI.K.1. are valid. The assessment may be coordinated with a review of the risk assessments and land use assumptions in Attachments 16 and 17.